

Tech. Division
THE SCIENCE NEWS-LETTER

A Weekly Summary of Current Science

EDITED BY WATSON DAVIS

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DAVID STARR JORDAN DEFENDS DARWINISM

Darwin's methods and general conclusions in the study of evolution were strongly defended by Dr. David Starr Jordan, chancellor emeritus of Stanford University in a principal address on "Evolution and Darwinism" before the American Association for the Advancement of Science which met at Los Angeles, September 17 to 20. Modern naturalists are forsaking the seas, the meadows, and the forests to work in the greenhouse, Dr. Jordan declared, urging a broad and universal outlook upon all facts before making generalizations.

"They will find their way back," he stated. "The apparent eclipse of Darwin today is wholly transitory."

Dr. Jordan said in part: "Nothing we know of takes place without an adequate cause. Among the attempts to search for causes for phenomena in animal and plant life, the most notable have been those of Lamarck and Darwin. Lamarck noted the facts of use and disuse in the development and modification of the individual, and suggested that the higher groups must have originated in like fashion. Hence the theory of development through the inheritance of acquired characters, hereditary traits being modified from generation to generation through use and disuse of organs or through 'the slow willing of animals'.

"Darwin went much farther, stressing especially the sifting and splitting due to varying environment. These he summed up under the complex term of 'Natural Selection'. He conceived of a 'struggle for existence' with the continued survival of those which could maintain themselves, bequeathing their adaptive characters to their progeny.

"There is a recent tendency among biologists to ignore Darwin and his method of approach in favor of more metaphysical conceptions of evolution, as unconditioned by environment. The process of induction is slow and laborious, that of deduction may be speeded up as demanded. The basal fact remains, the method of Darwin of considering all relevant truths is the only way. Partial or deductive conclusions can only lead to the state of mind of unshaken belief in evolution and 'agnosticism' as to its 'causes'. But the causes are the matters really important."

After emphasizing that the descent of living forms from series now extinct was too obvious for any well-informed mind to question, Dr. Jordan continued:

"We would like to know how this came about. Darwin's work is like a great sketch map which his successors are filling in and in no vital respect will the final chart vary from the ascribed landmarks. Naturalists have found that they

MEMORANDUM FOR THE SECRETARY OF THE ARMY
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can produce in a few weeks by selection and segregation forms apparently as distinct as Nature can establish through similar means in a millenium. But Nature's species are of long endurance and the reason why this is so is a vital part of our problem.

"We know nothing of evolution *invacuo*, of change in life unrelated to environment. All forms of life are split up into species with adaptation to external conditions visible in every structure. We know of no way in which organisms become adapted to special conditions except by the progressive failures of those which do not fit. No organism has escaped or can escape the grasp of selection.

"To admit these facts and yet say that selection and segregation are not factors in evolution would appear to make the matter a mere question of words. If by evolution we mean the theoretical progress of life, due solely to forces intrinsic in organisms, then outside influences are of course not factors in such evolution. If, however, we mean the actual movements of actual organisms on this actual earth, then extrinsic influences and obstacles are factors in continuous, diverging change."

READING REFERENCE - Darwin, Charles. The Origin of Species. New York, D. Appleton & Company, 1889.

Outline of Science, Ed. by J. Arthur Thomson, Chapter XI, How Darwinism Stands Today. New York, G. P. Putnam's Sons, 1918.

PACIFIC BELIES NAME SAYS INDIAN GEOGRAPHER

A danger sign was hung out over parts of the Pacific about which little weather information has been published when Dr. Stephen S. Visser of Indiana University gave members of the American Meteorological Society meeting at Los Angeles figures on the number of hurricanes sweeping those waters.

On the average two or three violent cyclones occur annually off the west coast of Mexico and Central America, he said. There are few islands between Hawaii and Mexico, and relatively few ships passed that way before the Panama Canal was opened. Surprisingly little has been written about the storms in that region and now it is very desirable that the danger be known.

The central Pacific likewise is not without dangerous storms, Dr. Visser said, although few appear to attain the hurricane violence that is the case in the eastern and western parts of the ocean. About 27 cyclonic disturbances have occurred in tropical latitudes between longitudes 140W and 140E in the last three years. Of these an average of three a year were accompanied by gales. Honolulu which is reputed not to have severe storms nevertheless suffered from a wind of 56 miles an hour in January of this year.

READING REFERENCE - Murray, John. The Ocean. Home University Library. New York, Henry Holt and Company, 1913.

and change in a few cases to selection and reproduction from apparently as the result of some external factor. It is a possibility that the change in the position of the body of the embryo and the position of the body of the embryo is a result of some external factor.

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SUN'S ATMOSPHERE RARE; TEMPERATURE 10,000 DEGREES

The atmosphere of the sun, although many times thicker than that of the earth, and composed largely of the incandescent vapors of metals, is not as dense as the atmosphere of the earth, Dr. Charles E. St. John of the Mt. Wilson solar observatory told members of the American Association for the Advancement of Science at Los Angeles.

"Some years ago the pressure in the sun's atmosphere was thought to be some six or eight times that of the earth's atmosphere", Dr. St. John said, "but recent lines of investigation have shown that the older interpretations were in error and that the pressure is only a small fraction of an atmosphere."

The total thickness of the atmosphere of the sun which is accessible to direct observation is about 10,000 miles, he added, although most of the material is concentrated in the bottom layer some 200 miles in thickness. Above this atmosphere the corona extends out in space for scores of thousands of miles.

Salamander,

"If a that imaginary being that lives on fire, could be sent from the earth to explore the sun, he would", said Dr. St. John, "on passing the corona encounter an unthinkable rare atmosphere of ionized calcium. Descending he would add to this hydrogen, helium, magnesium, sodium, iron, and normal calcium. When he reached the photosphere his atmosphere would contain all the elements found in the sun, the pressure would be that of a partial vacuum, the temperature 10,000 degrees Fahrenheit, and the fiery blasts would have a velocity of a thousand miles an hour."

SCIENTIST BLAMES WIND FOR WAY OUR RIVERS RUN

Storms along the same tracks across this continent for countless ages were this morning held responsible for the upheaval which fixed the great drainage lines to the north into the Arctic Ocean and to the South into the Gulf of Mexico and the Atlantic Ocean, in an address by Dr. Marsden Manson, consulting engineer, to the Meteorological Society of America meeting at Los Angeles. Dr. Manson compared charts published by the U. S. Weather Bureau with the geologic evidences along the path followed by most of the storms recorded on them.

Examination of this evidence shows, he said, that this belt of maximum storm frequency has persisted not only during the modern era, but well back into geologic time. The peaks and passes in the great mountain ranges can be crossed with less difference in elevation along this storm belt, he pointed out, and the peaks and passes themselves are lower where these prevailing storm winds sweep than in latitudes to the north or to the south.

Greater denudation along this belt and greater sedimentation upon areas north and south has caused the one to be a region of gradual upheaval and the others of gradual depression. The concentration of lessened pressure and denuding agencies has established this belt as one of the greatest upheaval and of exposure of the oldest rock foundations across the continent, thus fixing the great drainage lines.

SCIENCE MAY HARNESS CHINESE RIVER FLOODS

The Yellow River, "China's Sorrow," can be "muzzled" by modern engineering methods, said John R. Freeman, chief consulting engineer of the Grand Canal Conservancy in China, in addressing the sixth joint convention of the Science Society of China and the Chinese Engineering Society at Brown University. Mr. Freeman said:

"There are grounds for hope that even the Yellow River can be kept within its banks, trained to flow on a straighter course, quickened in its flow and made to deliver its silt to the sea, with no further outbreaks like those of 1852, 1887, and 1921, which in their turn have caused far more of widespread suffering and death than the recent earthquakes in Japan."

"China's hope for development in the future lies with the civil rather than the military engineer. "Some of the most important engineering problems of the world are presented in China. Problems of flood control, of famine relief, of reforestation, of transportation, and of relief from pestilence.

"I have studied this matter of protection against flood in China and I profoundly believe that it is feasible to prevent in a large measure the outbreaks that now periodically devastate 10,000 square miles."

SPARROWS NEST IN DEATH VALLEY BIRD SCIENTIST DISCOVERS

English sparrows have made their home in Death Valley, ornithologists of the American Association for the Advancement of Science were told in an address by Dr. Joseph Grinnell, professor of zoology of the University of California, in which he gave the results of the bird census taken by him in the below-sea-level portions of that desert. This sparrow colony, established in the 60 acre oasis at Furnace Creek Ranch surrounded by a vast desert of extreme type, furnishes an extremely interesting "experiment in nature," he declared and explained that if it persists it will show how soon, if at all, the color and markings of the birds will be affected by the extreme climatic conditions of their environment.

In accounting for the surprising presence of these nonmigratory birds in the desert, Dr. Grinnell suggested that they probably came in about 1914 when the Tonopah and Tidewater Railroad was constructed to Ryan which is only 17 miles from the Ranch by a road over which more or less teaming is done.

Sparrows are one of the few species of birds which Dr. Grinnell found breeding in the desert. His evidence indicates that sparrows nest late in this hot climate. This is contrary to the theory that it is a certain amount of heat that starts breeding; as it is hotter at Furnace Creek Ranch in April than it is in July in west-central California where sparrows nest generally by April 1.

Most of the 124 species of birds which have been found in Death Valley are Migratory.

"As is well known," said Dr. Grinnell, "migration comes to human attention chiefly through notice of the birds which stop over on the way. We do not ordi-

REPORT OF THE COMMITTEE ON THE PRACTICE OF MEDICINE

The Committee on the Practice of Medicine, created by the American Medical Association in 1915, has the honor to submit herewith its report. The Committee was organized to study the various problems connected with the practice of medicine, and to make recommendations to the Association and to the public. It has held numerous public hearings, and has received many suggestions from the medical profession and from laymen. It has also conducted extensive research into the various phases of the medical profession, and has endeavored to secure the most reliable information possible.

The Committee has found that the medical profession is in a state of transition. The old methods of practice are being replaced by new methods, and the old standards are being replaced by new standards. The Committee has endeavored to keep abreast of these changes, and to make recommendations which will be in line with the progress of the profession. It has found that the public is becoming more and more interested in the medical profession, and that the public is demanding more and more of the medical profession. The Committee has endeavored to meet these demands, and to make recommendations which will be in line with the progress of the profession.

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THE MEDICAL PROFESSION

The medical profession is a body of men and women who are engaged in the study and practice of the art and science of medicine. They are the ones who are responsible for the health and well-being of the community. They are the ones who are called upon to diagnose and treat the various diseases and conditions which afflict the human race. They are the ones who are responsible for the prevention of disease and the promotion of health. They are the ones who are called upon to teach and to train the next generation of medical men and women. They are the ones who are responsible for the advancement of the medical profession and the betterment of the human race.

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narily see the birds in actual passage. Death Valley is a north-and-south trough between high mountain ranges, the Amargosa Range on the east, 4000 to 7000 feet high, and the Panamint Range to the west, 5000 to 11000 feet high. The Valley forms a natural channel for through migration. Thus Furnace Creek Ranch is a natural lodestone, pulling to itself, now and then, from the migrant stream, individuals or flocks, day or night, and these may loiter a few minutes or a few hours, or even a few days, before resuming their journey. Again and again I had the experience of seeing bands of swallows, which migrate by day not far from ground, arrive from the south, wheel a few times over the alfalfa, and then make off northwards."

If Furnace Creek Ranch could be made the base for continuous observations of birds throughout the entire year for a series of years, quite as startling and significant findings would result, he predicted, as have resulted from the migration studies on the island of Heligoland of the North Sea.

READING REFERENCE - Thomson, J. Arthur. The Haunts of Life. New York, Harcourt, Brace and Company, 1922.

SAYS BIRTH CONTROL NEEDED LATER, NOT URGENT NOW

No need exists for birth control as an immediate remedy for the ills affecting the World as a result of the War, Sir William H. Beveridge, British economist told the economics section of the British Association for the Advancement of Science at its recent

.Liverpool meeting.

For the present troubles man has to accuse "neither the niggardliness of nature nor his own instinct of reproduction, but other instincts as primitive and, in excess, as fatal to Utopian dreams", Prof. Beveridge said, in pointing out that the world is now poorer in resources by its lost years and ruined capital and that, because of a lesson in compulsory self-sufficiency too well learned causing the creation of new economic barriers, it makes worse use of its diminished resources.

Yet, looking into the future, Prof. Beveridge said:

"The idea that mankind, while reducing indefinitely the risks to human life, can, without disaster, continue to exercise to the full a power of reproduction adapted to the perils of savage or pre-human days, can control death by art and leave births to Nature, is biologically absurd. The rapid cumulative increase following on any practical application of this idea would within measurable time make civilization impossible in this or any other planet.

"In fact, this idea is no more a fundamental part of human thought than is the doctrine of laissez faire in economics, which has been its contemporary, alike in dominance and in decay. Sociology and history show that man has hardly ever acted on this idea; at nearly all stages of his development he has, directly or indirectly, limited the number of his descendants. Vital statistics show that the European races, after a phase of headlong increase, are returning to

restriction. The revolutionary fall of fertility among these races within the past fifty years, while it has some mysterious features, is due in the main to practices as deliberate as infanticide. The questions now facing us are how far the fall will go; whether it will bring about a stationary white population after or long before the white man's world is full; how the varying incidence of restriction among different social classes or creeds will affect the stock; how far the unequal adoption of birth control by different races will leave one race at the mercy of another's growing numbers, or drive it to armaments and perpetual aggression in self-defence.

"To multiply the people and not increase the joy is the most dismal end that can be set for human striving. If we desire another end than that, we should not burk discussion of the means. However the matter be judged, there is full time for inquiry, before fecundity destroys us, but inquiry and frank discussion there must be. Two inquiries in particular it seems well to suggest at once.

"The first is an investigation into the potential agricultural resources of the world. There has been more than one elaborate examination of coal supplies; we have estimates of the total stock of coal down to various depths in Britain and Germany, in America, China, and elsewhere; we can form some impression of how long at given rates of consumption each of those stocks will last; we know that 'exhaustion' is not an issue for this generation or many generations to come. There has been no corresponding study of agricultural resources; there is not material even for a guess at what proportion of the vast regions - in Canada, Siberia, South America, Africa, Australia - now used for no productive purposes could be made productive; at what proportion of all the 'productive' but ill cultivated land could with varying degrees of trouble be fitted for corn and pasture. Without some estimate on such points, discussion of the problem of world population is mere groping in the dark. The inquiry itself is one that by an adequate combination of experts in geographic and economic science - not by a commission gathering opinions or an office gathering statistical returns - it should not be difficult to make.

"The second is an investigation into the physical, psychological, and social effects of that restriction of fertility which has now become a leading feature of the problem. This also is a matter neither for one person - for its scope covers several sciences - nor for a commission; facts rather than opinions or prejudices are required.

"If the question be asked, not what inquiries should be made but what action should now be taken, it is difficult to go beyond the trite generalities of reconstruction, of peace and trade abroad, of efficiency and education at home. The more completely we can restore the economic system under which our people grew, the sooner shall we absorb them again in productive labor. If there be any question of numbers, if there be any risk that our people may grow too many, the last folly that we can afford is to lower their quality and go back in measures of health or education. Recoil from standards once reached is the gesture of a community touched with decay."

READING REFERENCE - Conklin, E. G. Heredity and Environment. Princeton, Princeton University Press, 1922.

Popenoe, Paul and Johnson, R. H. Applied Eugenics. New York, Macmillan Company, 1920.

The first of these is the fact that the majority of the cases of the disease are found in the lower social classes. This is a fact which has been well established by the results of the various inquiries which have been made into the subject. The second of these is the fact that the disease is found in all parts of the world. This is a fact which has also been well established by the results of the various inquiries which have been made into the subject. The third of these is the fact that the disease is found in all ages and both sexes. This is a fact which has also been well established by the results of the various inquiries which have been made into the subject.

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WEEDS SHOW HUMAN ORIGINS

The study of weeds and their origin was advocated by Prof. P. E. Newberry speaking to the British Association meeting at Liverpool, as a means to the solution of the problem of the origin of domesticated plants and animals. Weeds which grow in grain fields are valuable evidence as to the origin of those plants, for in certain countries these weeds seem to have originated similarly with the grain. Little was known he said of the origin of such common plants as flax, the date palm or the grape, or of such animals as the domesticated sheep, goat, camel, ass, and ox. The answer to these problems would, he said, throw much light on the early migrations of man.

The so-called element zirconium should now be classed as a mere mixture of the recently discovered element hafnium and zirconium, Dr. G. Hevesy, of Copenhagen, told the scientists. Zirconium extracted from different minerals has invariably been found to contain from one-half of one per cent to 30 per cent of the recently discovered element, he said.

Delinquent children are problems for treatment, not punishment, said Dr. W. A. Potts in a long discussion on the problem of juvenile delinquency. Too much should not be expected from gland treatments he stated, but a physical examination should precede the determination of all cases. A hunger for the child for country life was stated to be one of the causes for delinquency, Dr. Potts added:

"It is so difficult for the best endowed to adjust satisfactorily to modern town life that it may be said that a fundamental cause of delinquency is civilization."

These psychological factors were declared by Dr. C. Bart to be the most important factors of all, and together with weakened health and lax discipline in the home were stated to be more important than heredity, which merely gave a child a weakness which poor environment brought out.

Rhythmic dancing for school girls was advocated by Miss Margaret Einert who emphasized the need in physical education for something less formal, more spontaneous, and more in harmony with the activities of every-day life.

STONE IMPLEMENTS INDICATE MAN EXISTED MILLION YEARS AGO

Evidence for the existence of man during the Miocene epoch, something more than a million years ago was produced at the meeting of the British Association for the Advancement of Science at Liverpool, by Prof. W. J. Sollas, who announced the result of excavations made in Aurignac, France. Nearly five thousand specimens of eoliths or rudely shaped implements of stone were dug up and studied and according to Professor Sollas, these must have been shaped by human skill and not by natural causes. They seemed, he said, to bear cogent evidences of design. Miocene time is much earlier than fossil remains of early man have been dated, and it is believed that the stone specimens reported today may indicate human beings in existence even earlier than the so-called Foxhall man whose flints were found near Ipswich, England, recently.

READING REFERENCE - Osborn, Henry Fairfield. Men of the Old Stone Age; their environment, life and art. New York, Charles Scribner's Sons, 1921.

HENS BECOME ROOSTERS

Eight cases of sex-reversal in hens were reported to the zoologists by Dr. F. A. E. Crew, in all of which the female bird underwent a transformation due to a lack of growing female sex elements and finally developed characteristic male sex-organization. In one case the hen became so much of a rooster as to become the father of a flock of chickens. According to Dr. Crew the growth of male sex tissue, in the female bird is prevented only by the presence of active and growing female elements and when these cease to develop the male elements grow unhindered.

PACIFIC COAST LACKING IN RADIO AIDS TO SHIPS

The Pacific coast is deficient in radio aids to navigation, officials of both the Navy Department and the Lighthouse Service agreed when questioned concerning possible causes for the recent wreck of seven U. S. destroyers, and the Pacific Mail S. S. Cuba near Point Arguello, California on September 9.

Investigation has brought out the fact that neither radio beacons nor radio compass stations have been installed anywhere on the long stretch of dangerous coast between San Francisco and Pt. Arguello, along which the destroyers were travelling. There is a radio compass at Pt. Arguello lighthouse and another farther down the coast at Pt. Hueneme, but bearings from two stations are needed to give a navigator his position and only the first named station was available to those on the wrecked ships.

There are two types of radio aids to navigators, the radio compass, operated by the Navy Department, and the radio beacon, operated by the Lighthouse Service. The radio compass stations are equipped to give the commander of a vessel at sea his compass bearing from the station in question. If such bearings from two stations can be obtained the position of the vessel may be accurately ascertained. The bearing is worked out by the land operator.

The radio beacon operates on a different principle. Radio signals are sent out broadcast in all directions at frequent intervals. Vessels are equipped with radio "direction finders" which enable them to locate the bearing of the sending station. If the bearings of two stations can be had the ships position can be worked out.

Each system has its advocates. The Navy Department favors the radio compass because it asserts that it is more accurate for the determination of bearings to be made by experts ashore who do nothing else, than by radio officers on shipboard who have many other distracting duties. Lighthouse officials favor the radio beacon with the direction finder on the ship as they assert it is best to have the responsibility for the ship's position fixed on board the vessel and not by someone ashore. The direction finder for use in connection with

RECEIVED BY THE SECRETARY OF THE DEPARTMENT OF THE INTERIOR, OREGON, MAY 1, 1915.

TO THE SECRETARY OF THE DEPARTMENT OF THE INTERIOR, OREGON.

For the purpose of the proposed project, it is necessary to have a certain amount of land, and it is proposed to acquire the same by purchase or otherwise. It is also proposed to have a certain amount of land, and it is proposed to acquire the same by purchase or otherwise.

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radio beacons has already been adopted by many of the large transatlantic and eastern passenger lines, and by the Standard Oil Company for the equipment of its tank steamers.

Only two radio beacons are at present in operation on the Pacific coast. These are on lightships off San Francisco and off the mouth of the Columbia river. Radio compass stations are more frequent but there are none between San Francisco and Pt. Arguello.

Little credence is given by government experts to the theory that the wrecks may have been caused by a current set up by an earthquake under the sea, or by the remoter ones in Japan. Such a thing is considered possible but unlikely. All unite, however, in the need of better radio protection to shipping along the western coast.

READING REFERENCE - Collins, Francis A. Sentinels Along Our Coast. New York, Century Company, 1922.

NEW FOSSIL BIRDS FOUND WITH FISHES THEY CAUGHT

Six species of fish-eating birds, all new to science, but belonging to families still living on the Pacific coast, have been discovered in shales quarried for commercial uses at Lompoc, California. Dr. Loye Miller, professor of biology of the University of California announced at the American Association for the Advancement of Science meeting at Los Angeles. Fish upon which they fed hundreds of thousands of years ago were found associated with them in their rock tomb.

The shales in which these remains were found were themselves made up of glassy shells of minute one-celled plants which had accumulated in the quiet waters of an enclosed bay, Dr. Miller said. Many species of fish inhabited these waters, and the fish-eating birds came in search of them. The remains of both the fish and birds became buried in the shale during its accumulation. Their bones became carbonized in time and turned black and now when the shale of a chalky whiteness is cut into blocks the black skeletons are revealed in sharp contrast against the white rock as clearly as an etching.

These shales belong to the Miocene period of geological time and some of the bird remains show stages intermediate between forms now far separated by specialization.

SMITHSONIAN ANIMAL HUNTER MEETS DEATH IN CHINESE WILD

Charles M. Hoy, explorer collecting mammals in the interior of China for the National Museum here died of appendicitis September 8, cable advices from Kuling, Kiangsi Province, to the Smithsonian Institution state. Just before this news was received officials learned by mail that Mr. Hoy's search for typical Chinese

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animals had been marked by a series of disastrous circumstances including being fired upon in mistake for bandits, struggling through rain and humid weather while his clothes molded upon his back, being attacked by swarms of stinging caterpillars, and suffering sunstroke and a gunshot wound in the leg.

The Museum last week received over a hundred specimens of animals killed by Mr. Hoy in the little-known interior of China. Before this disastrous expedition, which began last December, the hunter-scientist made a remarkable collection of animals in a three year expedition into the Australian wilds.

TABLOID BOOK REVIEW

THE HUMAN SIDE OF FABRE, by Percy F. Bicknell. The Century Co.
1923. \$2.50

This book written one hundred years after the birth of its subject, yet only eight years after his death, tells in a charming manner typical incidents in the personal and the mental life of a scientist who lived through nearly the whole period of the development of his favorite science. The many quotations from the naturalist's writings are put together in an unusually happy manner by an appreciative and sympathetic critic who has succeeded in conveying to the reader Fabre's spirit of high enthusiasm, which is at once the driving force and the reward of the true scientist. No matter if some of the theories Fabre held have had to be abandoned in the progress of our learning, or even if some of his observations are found to have been faulty, the personality of the man himself, his intense love for the creatures he studied, and his almost obstinate perseverance in spite of all sorts of difficulties, give us a picture both refreshing and stimulating. To read the book is to know the man as his few intimate friends knew him, --- and much better than you would had you gone to call upon him in person when he became a celebrity!

H.M.D.

The greatest recorded rainfall catch in the Hawaiian Islands for the year 1922 was 452 inches on the summit of Mount Waialeale, Kauai, at an elevation of 5,075 feet.

Automatic train control apparatus is about to be installed on 110 miles of track between Camden and Atlantic City at a cost of about \$500,000.

The old coal pit tramways of about 100 years ago for which George Stevenson built his first "locomotive engines", had 4 ft. 8½ in. gage, and that is still the standard.

Enough milk is produced in the United States in a year to give each person in the country about 920 pounds.
